

Abstract for a short presentation at the Belgian AES section "Symposium on Audio Research and Practice in Belgium", Ghent, May 14, 2019.

## **The importance of precise reproduction of time-domain information in Loudspeaker Systems**

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Sounds and music contain both information in the time domain and information in the frequency domain. Traditional loudspeakers seem to concentrate mainly on performance in the frequency domain and often the precise reproduction of time domain information, also known as transients or aperiodic sound, gets less attention. A first consequence of this is that percussive musical sounds and sonic events like objects hitting or falling are not reproduced very realistically. But even more important is that the way the human auditory system perceives space, is based largely on time-domain information.

As a result, the generalised lack of precision in reproduction of time information has consequences well beyond the realism of percussive sounds and extends into other areas like for example the wide acceptance of inadequate compression algorithms, the proliferation of channels and immersive reproduction systems, and possibly the otherwise unexplained popularity of spaced microphones recording techniques.

The author participates in a team led by John Watkinson that develops new types of loudspeaker systems, based on study of human hearing, and with attention for precise reproduction and adequate dispersion for both time information and frequency information. Prototype loudspeakers will be shown and demonstrated.